

## **REMARKS**

Claims 1-52 and 54-88 are pending in the application. Claims 30-52 and 54-84 are withdrawn from consideration. By this Amendment, Claims 1 and 26 are amended, Claim 53 is canceled without prejudice or disclaimer of the subject matter therein, and Claims 85-88 are added. Favorable reconsideration is respectfully requested in light of the following Remarks.

### **I. Election/Restriction**

Applicant acknowledges that the Election/Restriction has been made FINAL and Claims 30-52 and 54-84 have been withdrawn from consideration as being drawn to a non-elected invention.

### **II. Miscellaneous**

1. The Office action objects to the drawings because the drawings do not include reference numerals 13 and 30. By this Amendment, Paragraphs [0026] and [0036] are amended to correct the typographical errors. Withdrawal of the objection is respectfully requested.

2. The Office action objects to the drawings because reference numerals 24, 28 are not mentioned in the specification. However, reference number 24 is mentioned in Paragraphs 26 and 44 of the specification. By this Amendment, Paragraph [0023] of the specification is amended to include reference number 28. Withdrawal of the objection is respectfully requested.

### **III. The Claims Define Patentable Subject Matter**

1. The Office action rejects Claims 1-4, 8-10, 13-16, 18, 20-25 and 27-29 under 35 U.S.C. 102(b) over Klos et al. (U.S. Patent No. 6,432,176, hereinafter "Klos"), and Claims 1-6, 8-11 and 13-29 under 35 U.S.C. 102(e) over Redmond (U.S. Patent Application Publication No. 2004/0016769, hereinafter "Redmond"). The rejections

are respectfully traversed.

By this Amendment, independent Claim 1 specifies, *inter alia*, an appliance comprising

a hydrogen storage container including a nanostructured material capable of storing the substantially carbon-free hydrogen in a condensed state, the container including:

- (i) a carbon-based nanostructured material and
- (ii) a metal capable of acting as both a seed for the formation of the nanostructured material and a facilitator for promoting the storage in the condensed state of the substantially carbon-free gaseous hydrogen provided to the storage container, the metal having a particle size less than about 100 nanometers.

Support for this feature can be found, for example, in Paragraph [0012] of the specification.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *See MPEP §2131*. As admitted in Paragraph 13 of the Office action, at least the feature of a storage container that includes a metal capable of acting as both a seed for the formation of the nanostructured material and a facilitator for promoting hydrogen storage, is not disclosed, taught or suggested in Klos and Redmond, so the rejection is unsupported by the art and should be withdrawn.

For at least this reason, independent Claim 1 is allowable over the applied art. Claims 2-6, 8-11 and 13-29, which depend from Claim 1, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

Further, it would not have been obvious to modify either Klos or Redmond with Rodriguez et al. (U.S. Patent No. 5,653,951, hereinafter “Rodriguez”) to meet the claimed invention.

Rodriguez relates to the storage of hydrogen in layered nanostructures, such as carbon nanofibers. In Rodriguez, the nanofibers are grown using a suitable catalyst in the presence of an effective carbon-containing compound. *See col. 4, lines 61-64*. The

catalysts are alloys or multi-metallics comprised of a first metal selected from the metals of Group IB, and a second metal selected from the group consisting of Fe, Ni, Co, Zn, or mixtures thereof. *See col. 5, lines 20-41*. The substrate is heat treated until the particle size of the metal oxides is reduced to between about 25 Angstrom to about 1500 Angstrom. *See col. 6, line 47-col. 7, line 5*. After the nanofibers are grown, the final structure is treated with an aqueous solution of an inorganic acid, such as mineral acid, to remove any excess catalyst particles. *See col. 8, lines 27-33*.

Although Rodriguez mentions that, after the nanofibers are grown, the nanostructures can be treated to include minor amounts (1 wt. % to 5 wt. %) of a metal, preferably a transition metal, there is no mention in Rodriguez of the particle size of the metal for the dissociative absorption of hydrogen. *See col. 8, lines 41-49*. Clearly, the transition metal mentioned in Rodriguez does not act as both a seed for the formation of the nanostructured material and a facilitator for promoting the storage in the condensed state of the substantially carbon-free gaseous hydrogen provided to the storage container, let alone having a particle size less than about 100 nanometers, as recited in the claimed invention. Thus, it would not have been obvious to modify either Klos or Redmond with the teaching of Rodriguez to meet the claimed invention.

For at least this additional reason, Claim 1 is allowable over the applied art, taken singly or in combination. Claims 2-6, 8-11 and 13-29, which depend from Claim 1, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

2. The Office action rejects Claims 7 and 12 under 35 U.S.C. 103(a) over Klos or Redmond in view of Hussain et al. (U.S. Patent Application Publication No. 2002/0117123, hereinafter "Hussain"). The rejection is respectfully traversed.

According to MPEP §2143, to establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Linter*, 458 F.2d 1013, 173 USPQ 560, 562 (CCPA 1972). Second, there must be a reasonable

expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Finally, the applied reference must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Claims 7 and 12 depend from Claim 1. It is respectfully submitted that at least the feature of a metal capable of acting as both a seed for the formation of the nanostructured material and a facilitator for promoting the storage in the condensed state of the substantially carbon-free gaseous hydrogen provided to the storage container, the metal having a particle size less than about 100 nanometers, as recited in amended Claim 1, is not disclosed, taught or suggested in the applied art, taken singly or in combination.

For at least this reason, the Office action fails to establish a *prima facie* case of obviousness, and Claims 7 and 12 are allowable over the applied art, taken singly or in combination.

New dependent Claims 85-88 further define the metal as comprising an organometallic material. Support for this feature can be found in *Paragraph [0061]* of the specification.

It is respectfully submitted that at least this feature is not disclosed, taught or suggested in the applied art. For at least this additional reason, Claims 85-88 are allowable over the applied art, taken singly or in combination.

### **Conclusion**

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of the application is earnestly solicited.

Should the Examiner believe anything further would be desirable in order to place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

It is believed that any additional fees due with respect to this paper have already been identified. However, if any additional fees are required in connection with the

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Respectfully submitted,

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